



### Jakarta Mass Rapid Rail Transport, Phase 1, CP106 Jakarta, Indonesia



#### PROJECT SUMMARY

PROJECT NAME: Jakarta Mass Rapid Rail Transport – Phase 1 – CP106

PROJECT DATE: 2015-17

CLIENT: PT Mass Rapid Transit Jakarta

CONTRACTOR : SMCC-HK JV

CONSULTANT: CECI

INSTRUMENTATION SPECIALIST: PT Sarana Jaya



#### OVERVIEW

The project comprised the construction of two underground stations, Bunderan HI and Dukuh Atas, together with more than 8km of associated tunnelling.

Diaphragm walls were installed to form the station boxes followed by excavation and construction of the slabs from roof slab downwards as excavation progresses.

For entrance and ventilation shafts, a cast in-situ reinforced concrete was used as the permanent structure. Entrances and ventilation shafts were constructed using bottom up construction method and steel struts and walers used to prop open the excavation.

Tunnelling was carried out using Earth-Pressure-Balance (EPB) Tunnel Boring Machines (TBM).

#### MONITORING

Monitoring included:

##### **Soldier piles**

Inclinometer casing behind soldier piles for manual inclinometer surveys and monitor ground deflections.

##### **Internal struts**

VW Strain gauges were installed on the internal struts to monitor strain.

##### **D-Walls**

VW Sister Bar strain gauges were installed in the steel cages.

##### **Line of tunnel**

Automatic VW Borehole Rod Extensometers and manual Magnetic Extensometers to monitor settlements. VW piezometers to monitor pore water pressures.

##### **Tunnel segment Lining**

Total Pressure cells to monitor external pressures

##### **Data acquisition**

Multi-sensor stand-alone loggers together with manual readouts

#### PRODUCTS USED

**VWP-3000 Standard piezometer**

**VW Strain Gauges**

**VW Sister Bars**

**VW Borehole Rod Extensometers**

**Magnetic Extensometers**

**XC Inclinometer Casing**

**Total Pressure Cells**

**Stand-alone data logger**

**Manual Readout**